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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,099	11/06/2001	Gary Edwin Bement	STL10132/40046.0061USU1	9979
23552	7590	03/02/2004	EXAMINER	
MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			RENNER, CRAIG A	
			ART UNIT	PAPER NUMBER
			2652	
DATE MAILED: 03/02/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/046,099

Applicant(s)

BEMENT ET AL.

Examiner

Craig A. Renner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 December 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 and 12-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 9, 12, 13, 17, 20, 22 and 24 is/are rejected.
- 7) ☒ Claim(s) 4-8, 14-16, 18, 19, 21, 23 and 25-28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Drawings*

1. The drawings were received on 10 December 2003. These drawings are acceptable.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Bement et al. (US 2002/0101686).

Bement teaches a suspension (270-1) comprising a load beam (118-1); a gimbal (120-1) positioned at one end of the load beam; a slider (122) attached to the gimbal, wherein a head is fixed to the slider (lines 5-7 in paragraph [0024], for instance); and a shape memory alloy segment (272-1) attached to the gimbal (lines 7-10 in paragraph [0044], for instance) [as per claim 1]; wherein the shape memory alloy segment comprises nickel-titanium (lines 2-3 in paragraph [0043], for instance) [as per claim 2];

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wherein a distal end of the gimbal has two parallel flexure beams (196 and 198) connected by a cross beam (adjacent 200), and the cross beam defines an attachment pad (200) that is secured to a top surface of the slider (lines 5-5 in paragraph [0025], for instance) [as per claim 3]; and wherein the gimbal is attached to a lower surface of the load beam (as shown in FIG. 13, for instance) [as per claim 9].

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 12, 17, 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (JP 01-179286).

With respect to claims 12 and 17, Oguchi teaches a disc drive comprising a head disc assembly (FIG. 1, for instance) having a drive motor (lines 8-9 of the CONSTITUTION, for instance) carrying a disc (lower-most 1) and an actuator assembly (line 10 of the CONSTITUTION, for instance) having an actuator arm (4); a suspension (lower-most 3) having one end connected to a slider (lower-most 2) and an opposite end connected to the actuator arm (as shown in FIG. 1, for instance); and at least one shape memory alloy segment (5') attached to the suspension for moving the slider between a contracted state away from the disc when temperature within the head disc

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assembly increases (i.e., the thickness of shape memory alloy segment 5' thins or decreases as temperature increases thus moving lower-most slider 2 away from lower-most disc 1, lines 1-4 of the PURPOSE and lines 5-7 of the CONSTITUTION, for instance) and a relaxed state near the disc when temperature within the head disc assembly decreases (i.e., the thickness of shape memory alloy segment 5' returns or increases as temperature decreases thus moving lower-most slider 2 near lower-most disc 1, lines 1-4 of the PURPOSE and lines 5-7 of the CONSTITUTION, for instance) [as per claim 12]; wherein the suspension comprises a load beam (3) having a proximal end and a distal end, wherein the proximal end is attached to the actuator arm (as shown in FIG. 1, for instance), and the distal end forms a tongue for transferring a preload force to the slider (as shown in FIG. 1, for instance) [as per claim 17].

With respect to claims 20 and 22, Oguchi teaches an apparatus for providing passive control of flying height of a slider (lower-most 2) over a disc (lower-most 1) within a head disc assembly (FIG. 1, for instance) in a disc drive, the head disc assembly having a drive motor (lines 8-9 of the CONSTITUTION, for instance) about which the disc spins and an actuator assembly (line 10 of the CONSTITUTION, for instance) having an actuator arm (4), the apparatus comprising a suspension (lower-most 3) having one end connected to the slider and an opposite end connected to the actuator arm (as shown in FIG. 1, for instance), wherein the slider flies above the disc at a predetermined flying height (as shown in FIG. 1, for instance); and means (includes 5', for instance, in at least an equivalent structural sense) attached to the suspension for increasing the flying height of the slider when the temperature in the head disc

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assembly increases (i.e., the thickness of means 5' thins or decreases as temperature increases thus increasing the flying height of the lower-most slider 2 relative to the lower-most disc 1, lines 1-4 of the PURPOSE and lines 5-7 of the CONSTITUTION, for instance) and decreasing the flying height of the slider when the temperature decreases (i.e., the thickness of means 5' returns or increases as temperature decreases thus decreasing the flying height of the lower-most slider 2 relative to the lower-most disc 1, lines 1-4 of the PURPOSE and lines 5-7 of the CONSTITUTION, for instance) [as per claim 20]; wherein the means comprises at least one shape memory alloy segment (line 1 of the CONSTITUTION, for instance) [as per claim 22].

Oguchi, however, remains silent as to the head disc assembly further comprising "a base plate and a top cover" as per claims 12, 17, 20 and 22, and the suspension further comprising "a dimple formed on a lower surface of the tongue" and "a gimbal attached to the distal end of the load beam, one end of the gimbal forming a cutout region bordered by two side arms and a cross beam, the cross beam defining an attachment pad attached to the slider, wherein the dimple of the load beam protrudes through the cutout region to make contact with the slider and to permit the slider to pivot about the dimple" as per claim 17.

Official notice is taken of the fact that it is notoriously old and well known in the head disc assembly art to provide a head disc assembly with a base plate and a top cover in the same field of endeavor for the purpose of protecting the head disc assembly from contamination. Official notice is also taken of the fact that it is notoriously old and well known in the suspension art to provide a suspension with a

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dimple formed on a lower surface of a tongue and a gimbal attached to a distal end of a load beam, one end of the gimbal forming a cutout region bordered by two side arms and a cross beam, the cross beam defining an attachment pad attached to a slider, wherein the dimple protrudes through the cutout region to make contact with the slider and to permit the slider to pivot about the dimple in the same field of endeavor for the purpose of enabling disc surface irregularity compensation.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have had the head disc assembly of Oguchi further comprise a base plate and a top cover, and to have had the suspension of Oguchi further comprise a dimple formed on a lower surface of the tongue and a gimbal attached to the distal end of the load beam, one end of the gimbal forming a cutout region bordered by two side arms and a cross beam, the cross beam defining an attachment pad attached to the slider, wherein the dimple of the load beam protrudes through the cutout region to make contact with the slider and to permit the slider to pivot about the dimple. The rationale is as follows:

One of ordinary skill in the art would have been motivated to have had the head disc assembly of Oguchi further comprise a base plate and a top cover since such protects the head disc assembly from contamination.

One of ordinary skill in the art would have been motivated to have had the suspension of Oguchi further comprise a dimple formed on a lower surface of the tongue and a gimbal attached to the distal end of the load beam, one end of the gimbal forming a cutout region bordered by two side arms and a cross beam, the cross beam

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defining an attachment pad attached to the slider, wherein the dimple of the load beam protrudes through the cutout region to make contact with the slider and to permit the slider to pivot about the dimple since such enables disc surface irregularity compensation.

6. Claims 13 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (JP 01-179286) as applied to claims 12 and 20 above, and further in view of Takahashi et al. (JP 60-055570).

Oguchi teaches/suggests the disc drive/apparatus as detailed in paragraph 5, supra. Oguchi, however, further remains silent as to the shape memory alloy/means being "nickel-titanium" as per claims 13 and 24.

Takahashi teaches that nickel-titanium is a notoriously old and well known shape memory alloy/means material in the art (line 2 of the CONSTITUTION, for instance). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have had the shape memory alloy/means of Oguchi be nickel-titanium as taught by Takahashi. The rationale is as follows:

One of ordinary skill in the art would have been motivated to have had the shape memory alloy/means of Oguchi be nickel-titanium as taught by Takahashi since such is a notoriously old and well known shape memory alloy/means material in the art, and since selecting a known material on the basis of its suitability for the intended use is within the level of ordinary skill in the art, *In re Leshin*, 125 USPQ 416 (CCPA 1960).



***Allowable Subject Matter***

7. Claims 4-8,14-16,18-19, 21, 23, and 25-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

8. Applicant's arguments filed 10 December 2003 have been fully considered but they are not persuasive.

The applicant argues that because "the Bement et al. publication has a § 102(e) date (October 3, 2001) that is eight months later than the provisional filing date of the present application..., the Bement et al. publication does not constitute prior art" (emphasis added by applicant). This argument, however, is not found to be persuasive as the § 102(e) date of Bement is October 4, 2000, which is prior to the provisional filing date of the present application, and thus Bement does constitute prior art.

The applicant further asserts that Oguchi does not teach "a disc drive (or 'apparatus') having a shape memory alloy (or 'means' in claim 20) attached to the suspension for moving the slider between a contracted state away from the disc when temperature within the head disc assembly increases and a relaxed state near the disc when temperature within the head disc assembly decreases" (emphasis added by applicant). This argument, however, is not found to be persuasive as Oguchi does teach a disc drive/apparatus having a shape memory alloy/means (5') attached to a suspension (lower-most 3) for moving a slider (lower-most 2) between a contracted

state away from a disc (lower-most 1) when temperature within the head disc assembly increases (i.e., the thickness of shape memory alloy/means 5' thins or decreases as temperature increases thus moving lower-most slider 2 away from lower-most disc 1, lines 1-4 of the PURPOSE and lines 5-7 of the CONSTITUTION, for instance) and a relaxed state near the disc when temperature within the head disc assembly decreases (i.e., the thickness of shape memory alloy/means 5' returns or increases as temperature decreases thus moving upper-most slider 2 near lower-most disc 1, lines 1-4 of the PURPOSE and lines 5-7 of the CONSTITUTION, for instance).

The applicant lastly contends that the shape memory alloy/means of Oguchi does not "alter the 'fly height'" (emphasis added by applicant). This argument, however, is not found to be persuasive as Oguchi teaches that shape memory alloy/means 5' thins according to temperature rise in the head disc assembly (lines 5-7 of the CONSTITUTION, for instance) thus moving lower-most slider 2 away from lower-most disc 1 and altering the fly height of the lower-most slider relative to the lower-most disc.

### ***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig A. Renner whose telephone number is (703) 308-0559. The examiner can normally be reached on Tuesday-Friday 7:30 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Craig A. Renner  
Primary Examiner  
Art Unit 2652

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